Message

From: Pease, Anita [Pease.Anita@epa.gov]
Sent: 7/10/2020 8:13:14 PM
To: Messina, Edward [Messina.Edward@epa.gov]; Rice, Denise [Rice.Denise@epa.gov]; Nesci, Kimberly [Nesci.Kimberly@epa.gov]
CC: Weiler, Gregory [weiler.gregory@epa.gov]
Subject: RE: Lysol Makes a Killing on COVID-19. What Are the Chemicals in the Can?

Here is what we usually send out when we get inquiries about GLP labs through the efficacy mailbox:
Unfortunately, the Antimicrobial Division (AD) does not keep a list of commercial labs who do GLP efficacy studies for antimicrobial products. However, EPA maintains a list of Good Laboratory Practices Inspections that includes labs for which inspection were completed (please note that not all labs listed conduct efficacy testing). Please be aware that EPA does not endorse any particular labs nor does EPA certify testing labs.

We have also used the approach of telling people to google: EPA GLP commercial testing laboratories and review the results.

Anita

From: Messina, Edward <Messina.Edward@epa.gov>
Sent: Friday, July 10, 2020 3:00 PM
To: Rice, Denise <Rice.Denise@epa.gov>; Nesci, Kimberly <Nesci.Kimberly@epa.gov>; Pease, Anita <Pease.Anita@epa.gov>
Cc: Weiler, Gregory <weiler.gregory@epa.gov>
Subject: FW: Lysol Makes a Killing on COVID-19. What Are the Chemicals in the Can?

Can we help Greg out here?

Ed

Ed Messina, Esq.
Acting Office Director
Office of Pesticide Programs
Office of Chemical Safety & Pollution Prevention
U.S. Environmental Protection Agency
Washington, D.C.
p: (703) 347-0209

From: Weiler, Gregory <weiler.gregory@epa.gov>
Sent: Friday, July 10, 2020 11:00 AM
To: Nystrom, Eric <nystrom.eric@epa.gov>; Luschek, Robert <Luschek.Robert@epa.gov>
Cc: Senkayi, Sala <Senkayi.Sala@epa.gov>; Messina, Edward <Messina.Edward@epa.gov>; Don Renchie Ph. D. (d-renchie@tamu.edu) <d-renchie@tamu.edu>; Dale Scott <Dale.Scott@TexasAgriculture.gov>; Stuckey, Troy <Stuckey.Troy@epa.gov>
Subject: FW: Lysol Makes a Killing on COVID-19. What Are the Chemicals in the Can?

Our cooperative extension specialist in Pesticide Safety, Dr. Don Renchie, asked if EPA maintains an EPA list of certified labs. Do we keep such a list anywhere? See Dr, Renchie's inquiry below...

From: Don L. Renchie <drenchie@ag.tamu.edu>
Sent: Friday, July 10, 2020 9:33 AM
To: Weiler, Gregory <weiler.gregory@epa.gov>
Cc: bclawton@yahoo.com
Subject: RE: Lysol Makes a Killing on COVID-19. What Are the Chemicals in the Can?

Good morning Greg,

I have an inquiry from a producer looking for EPA approved labs. for chemical residue (including pesticides) analysis. Do you have or can you refer me to the list? Thanks in advance for your assistance.

Don L. Renchie, Ph.D.
Extension Program Leader and Coordinator
Regents Fellow, Professor & Extension Pesticide Safety Education Specialist
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From: Weiler, Gregory <weiler.gregory@epa.gov>
Sent: Friday, July 10, 2020 7:14 AM
To: Janet A. Hurley <jahurley@ag.tamu.edu>; Luschek, Robert <Luschek.Robert@epa.gov>; Nystrom, Eric <nystrom.eric@epa.gov>; Garcia, Diego <Garcia.Diego01@epa.gov>; Dunbar, Kristin <Dunbar.Kristin@epa.gov>; Angle, Stephen <Angle.Stephen@epa.gov>; Cross, Amy S <Amy.Cross@oregonstate.edu>
Cc: Don Renchie Ph. D. (d-renchie@tamu.edu) <d-renchie@tamu.edu>; ja-hurley@tamu.edu; Kevin Shelton (kevin.shelton@okstate.edu) <kevin.shelton@okstate.edu>; kim pope <kpope@agcenter.lsu.edu>; m-merchant@tamu.edu; pspradley <pspradley@uaex.edu>
Subject: FW: Lysol Makes a Killing on COVID-19. What Are the Chemicals in the Can?

Lysol Makes A Killing On COVID. What Are The Chemicals In The Can?

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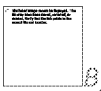
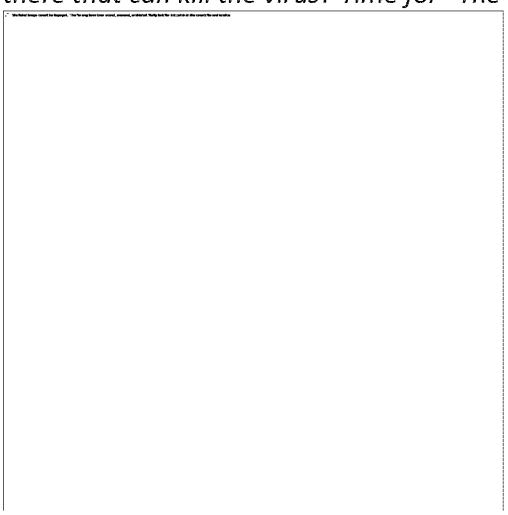


By Josh Bloom — July 8, 2020

If your sole goal in life is getting your hands on a can of Lysol spray, be prepared to be bitterly disappointed. The EPA gave its approval for Reckitt Benckiser (which sells the stuff) to make anti-COVID claims for two Lysol products. What's in there that can kill the virus? Time for "The Dreaded Chemistry Lesson From Hell"? I think so.



It's been pretty much impossible to buy a can of Lysol spray since the COVID nightmare began about seven months ago. Good luck getting the stuff now; the EPA has approved two sprays, Lysol Disinfectant Spray and Lysol Disinfectant Max Cover Mist. In a press release, the agency said;

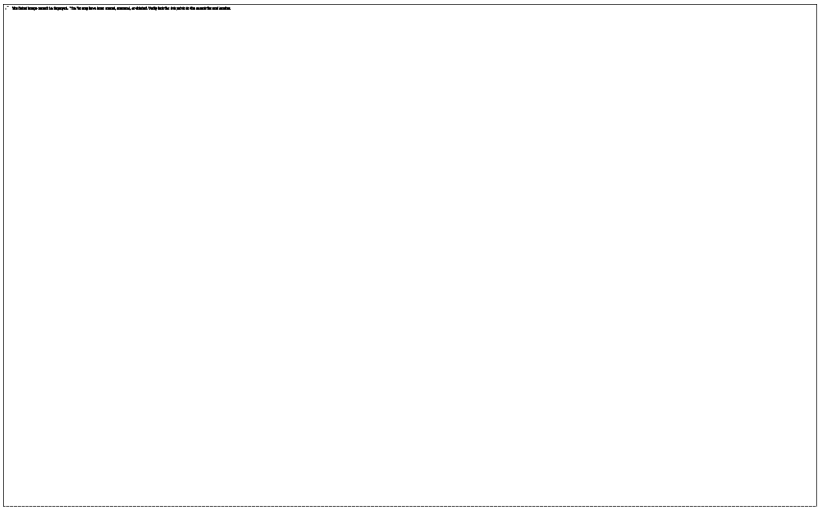
Last week, EPA approved two products, Lysol Disinfectant Spray (EPA Reg No. 777-99) and Lysol Disinfectant Max Cover Mist (EPA Reg No. 777-127), based on laboratory testing that shows the products are effective against SARS-CoV-2.

EPA Press release. July 6, 2020

If you're asking "what's so special about those two sprays?" or "what's in there that kills the coronavirus?" the answer is rather simple: alcohol and a common detergent. But it's not the stuff you wash your laundry with. There is more than one kind of detergent.

To understand the difference we need to delve deep into the bowels of one of the most despised of all the sciences. Faithful readers *surely* know what's coming now...

Yes, boys and girls. It's time for **The Dreaded Chemistry Lesson From Hell**®! So here it is, back by unpopular demand.



The two most common classes of detergents (Figure 1) are cationic (having a positive charge) and anionic (having a negative charge). Although they are structurally different, they have two essential properties in common - a water-soluble (polar) group on one end of the molecule and an oil-soluble group on the other. The combination of the two in one molecule gives it both oil and water solubility. This is why soaps and detergents will clean a greasy plate **(1)**.

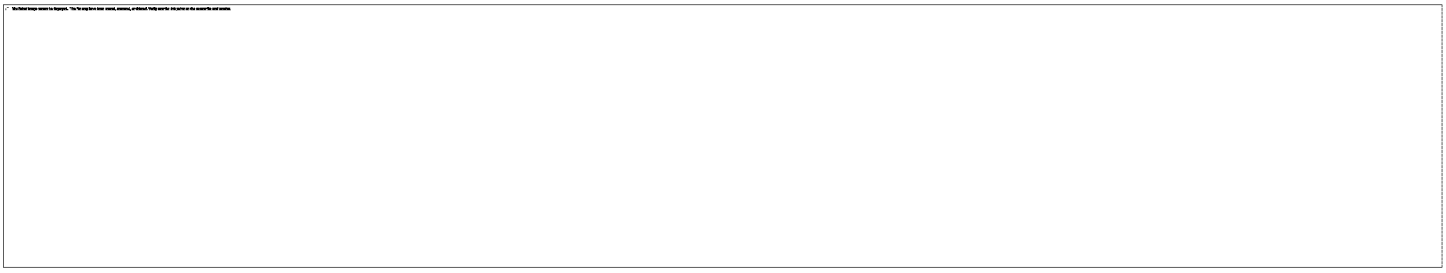


Figure 1. (Left) An anionic detergent containing a lipophilic (oil-loving) carbon tail and a hydrophilic (water-loving) head having a negatively charged sulfate group. (Right) A cationic detergent containing a long lipophilic carbon chain (red) and a polar hydrophilic quaternary nitrogen (a nitrogen atom with four alkyl groups bound to it). Quaternary ammonium detergents (called "quats") are typically a mixture containing different length carbon chains, which give the detergent different properties.

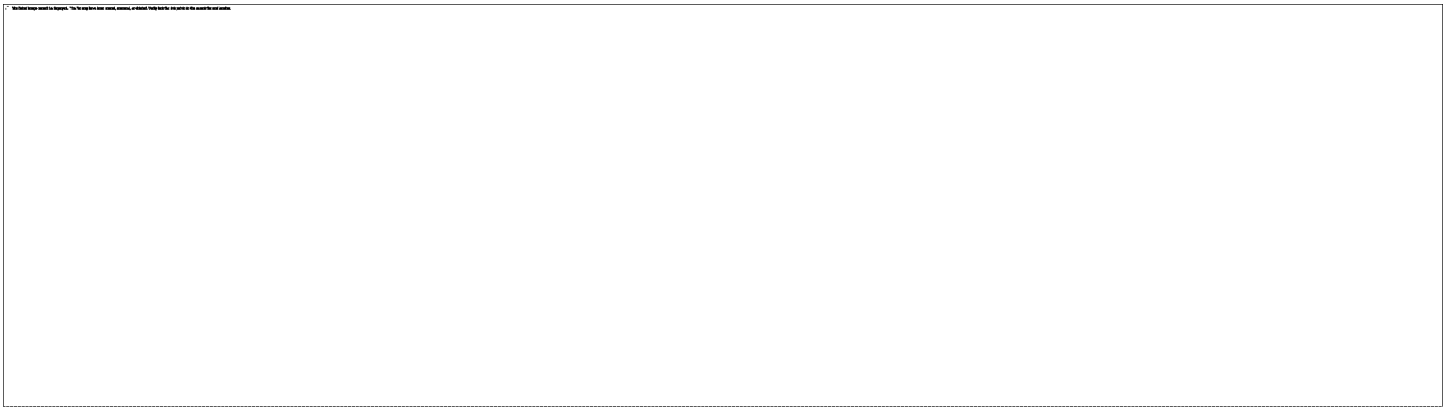
Although anionic and cationic detergents both wash stuff, the anionic type is better at cleaning (laundry detergent) but the quats are better at disinfecting, especially when combined with alcohol, killing bacteria, viruses **(2)**, and yeast.

Who Cares?

Well, the Reckitt Benckiser company which sells Lysol cares plenty, because right now its two brands are the only products that are EPA-approved to kill coronavirus. You should care too because the sprays quickly killed the bug on hard surfaces in between 1-5 minutes, as was demonstrated in a May 24 letter to the editor in the American Journal of Infection Control. Below are the product labels. They are very similar. It is impossible to tell from the label exactly which "quats" are where, but it usually makes little difference.

Maybe you'll care too because we have another way to get rid of the coronavirus on the many surfaces it's deposited on.

Here are the labels of the two products. They are almost identical.



How do quats kill viruses?

There are two types of viruses, enveloped and non-enveloped. Enveloped viruses contain an extra layer of "protection" called a lipid envelope, which, ironically, makes them more susceptible to being killed (Figure 2).

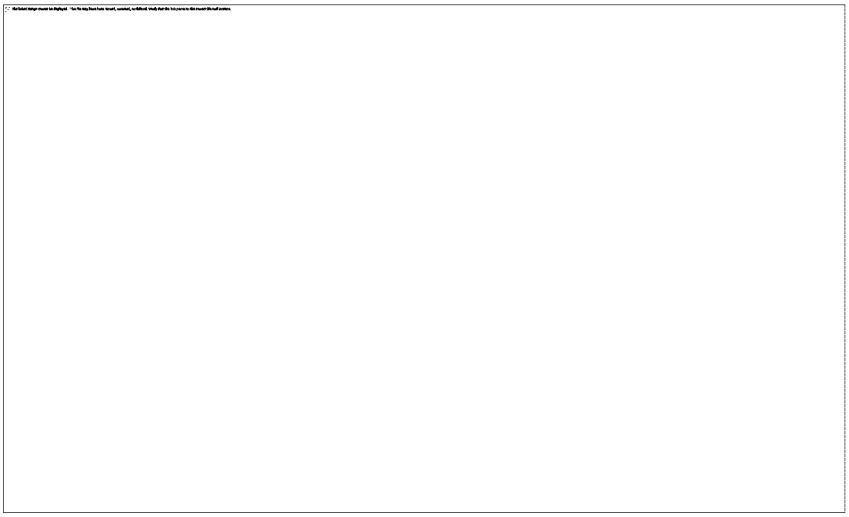


Figure 2. Non-enveloped (L) and enveloped (R) viruses. Image: Research Gate

Think of an enveloped virus as an apple covered in butter. A soapy sponge will clean off the butter but leave the apple intact. In this case, the quat is the soapy sponge. But, unlike the apple, once the envelope is damaged the virus is toast. Viruses without envelopes (e.g., norovirus) are more difficult to kill. Coronavirus has a lipid envelope. Small consolation, really.

Does this approval really matter?

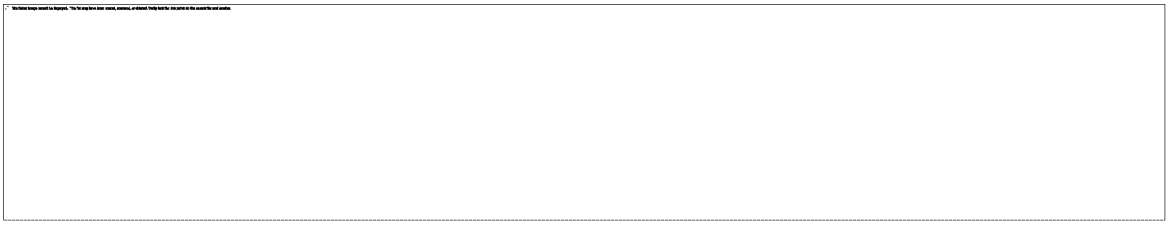
That's not clear. While it is comforting to spray and kill the little bastards, more and more it is becoming clear that respiratory droplets (person-to-person) are the primary mode of transmission and that surfaces play a less important role than once thought. Nonetheless, it can't hurt to better disinfect surfaces that are often touched by the public.

Can you spray Lysol in the face of people who will not wear masks?

Regrettably, no.

NOTES:

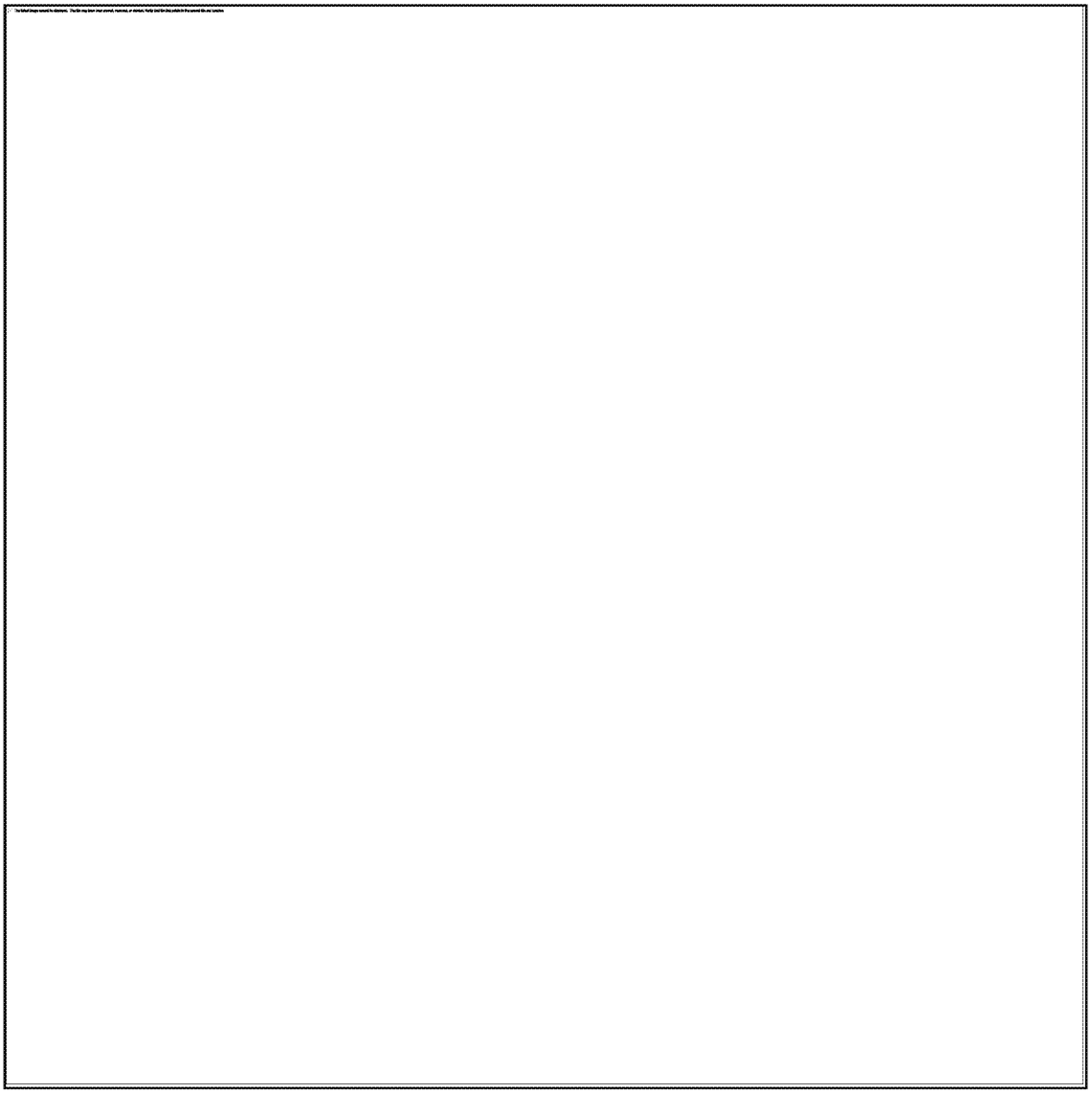
(1) Soap is also an anion detergent as you can see from its chemical structure. Shown below is sodium laurate, a common soap. Note the charged (polar) oxygen on the left and the lipophilic 11-carbon chain on the right.



(2) You can't technically kill a virus because it's not alive.

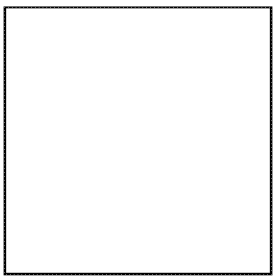
Tags:

From: American Council on Science and Health <morning@acsh.org>
Sent: Friday, July 10, 2020 6:30 AM
To: Weiler, Gregory <weiler.gregory@epa.gov>
Subject: Lysol Makes a Killing on COVID-19. What Are the Chemicals in the Can?



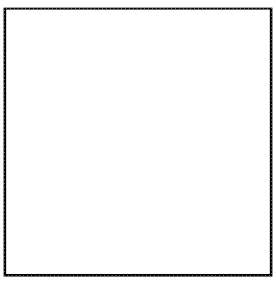
Today's Dispatch

- FDA Analysis of Antibiotic Development ... with Hubris!
- Lysol Makes a Killing on COVID-19. What Are the Chemicals in the Can?
- Happy Hypoxia: COVID-19's Paradoxical Effect on Breathing
- Strict Lockdowns Are Like Abstinence-Only Sex Ed



FDA Analysis of Antibiotic Development ... with Hubris!

The Food and Drug Administration recently published an analysis of antibiotic development looking back over the last 40 years. In addition, the paper was accompanied by a compelling editorial. These papers are well worth reading and are highly recommended for everyone, whether they're familiar with antibiotic development or not. And most notably, the hubris of the FDA analysis is astounding. READ MORE



Lysol Makes a Killing on COVID-19. What Are the Chemicals in the Can?

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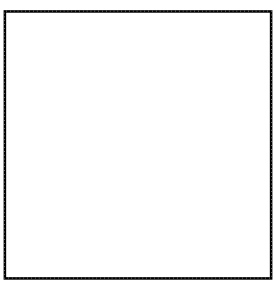
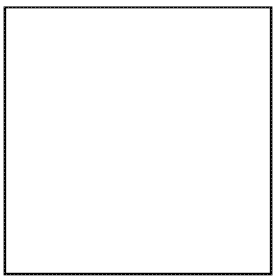


Happy Hypoxia: COVID-19's Paradoxical Effect on Breathing

Shortness of breath, also known as dyspnea, is a patient's subjective experience. For a long time, we thought that observable measurements, like the degree to which our blood was oxygenated, was consistent with that subjective experience. COVID-19 requires us to rethink those associations. READ MORE



Strict Lockdowns Are Like Abstinence-Only Sex Ed

They might work in some countries, but they aren't going to work everywhere. Americans, in particular, reject such restrictions on liberty, which is why a strict lockdown is sort of like sex education – with the only recommendation being not to have any at all.

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